Smart Relay:
SREL, SREL.ZK, SREL.AKV

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SimonsVoss technologies

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1.0 Important Information

Safety remark:
Caution! – Incorrect handling of the batteries and storage batteries used in this product can result in the risk of fire or burns. Do not charge, open or burn these batteries or heat them to more than 100 °C (212 °F).

Installation of a SimonsVoss Smart Relay requires knowledge in the areas of door mechanics, door certifications, installation of electronics and the use of the SimonsVoss software. For this reason, only trained and authorised personnel should install the unit.

SimonsVoss Technologies AG will not accept any liability for damages caused by incorrect installation.

Incorrectly installed Smart Relays may block the access through a door. SimonsVoss AG is not liable for the consequences of incorrect installation, such as blocked access to injured or endangered persons, property damage or other damages.

If you will be storing the Smart Relay for more than one week, remove the backup battery.

The Smart Relay must be installed in compliance with ESD (electrostatic discharge) guidelines. In particular, contact with the printed circuit boards and the switching circuits integrated on them must be avoided.

2.0 Product Description

The SimonsVoss Smart Relay is an electronic switch that you can switch with a SimonsVoss transponder. You can use the SimonsVoss software to configure the authorisation for transponders that are permitted to operate the Smart Relay. As a result, the Smart Relay offers the full function of an access control reader.

3.0 Before Ordering

3.1 Determine Which Version of the Smart Relay you need

1. Smart Relay basic version: ordering code SREL

   This relay allows simple yes/no authorisation for up to 8184 different transponders.

2. Smart Relay Plus version with access logging and time zones: ordering code SREL.ZK.

   Like the basic version, but with the capability of separately switching on access logging for the last 1024 accesses (for firmware version 4.0.01.15 and later), with date and time, or day-time zones for up to five groups of people, and automatic locking and unlocking.

3. Smart Relay Advanced version, ordering code SREL.ADV

   Like the Plus version, but with the following additional functions:
   - Connection for external modules using a three-wire bus
   - Connection of an extended antenna
   - Connections for serial interfaces to external time recording terminals or access control readers
   - Connection for external LED or buzzer

3.2 Determine Which Accessories you need

Extended antenna for unfavourable reception conditions ordering code: SREL.AV

Battery only for SREL, SREL.ZK and SREL.ADV in case you will be operating these products without an additional supply voltage: ordering code SREL.BAT

3.3 Dimension and Procure Power Supplies

These power supplies are necessary for all Smart Relays that will not be battery operated. The power supply should have an output of no more than 15 watts and should be capable of delivering voltage of 12 VAC or 5 to 24 VDC when the current is 100 mA.

Attention! Do not user any switched-mode power supplies near the Smart Relays.

The customer must provide all power supplies; they are not available from SimonsVoss.

3.4 Determine the Installation Position

The range from the transponder to the Smart Relay (reader range) is a maximum of 1.5 m (5 feet), but can be dampened by a metal environment (particularly by strong magnetic fields or aluminium).

Ideally, you should conduct a range test with an authorised transponder and a battery-operated Smart Relay.

3.5 Additional Information:

- All cables for connecting to the Smart Relay should be type IY(ST)Y ....x0.6 (Twisted-Pair shielded cable). The maximum cable length should not exceed 100 m (approximately 330 feet). At the same time, you must take into account the power losses when you dimension the supply voltage.

- You must take into consideration the technical specifications for the inputs and outputs (see Technical Data)

- You must lay and connect all cables according to VDE standards.

4.0 Before Installation

- Unpack the Smart Relay and check for any damages.

- Connect the Smart Relay to a supply voltage or battery.

- If you are operating the Smart Relay with a power supply, insert the backup battery included in the delivery into the holder provided for it (see Installation of the Backup Battery).

- Verify the function of the Smart Relay with a transponder in the condition as received from the factory.

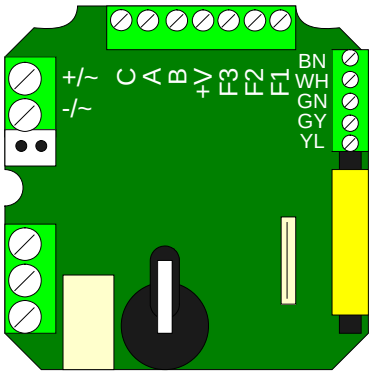
- If you are installing the Smart Relay in a flush socket device, remove the housing.

- If you are installing the Smart Relay on the wall, you can use the bottom plate as a template for the bore holes (6 mm).

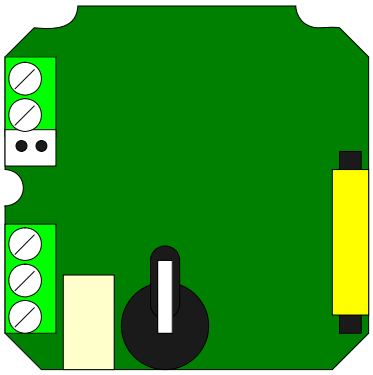
4.1 Installation of the Backup battery

Insert the battery only if you will be operating the Smart Relay with the power supply. Do not insert this battery if you will be operating with the SREL.BAT!

SREL.ADV

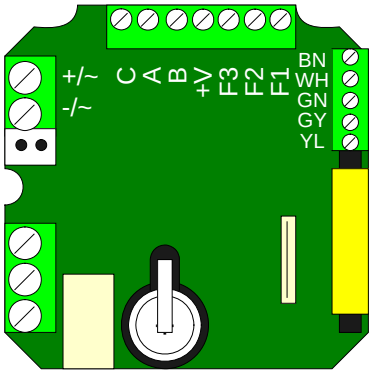


un SREL and SREL.ZK

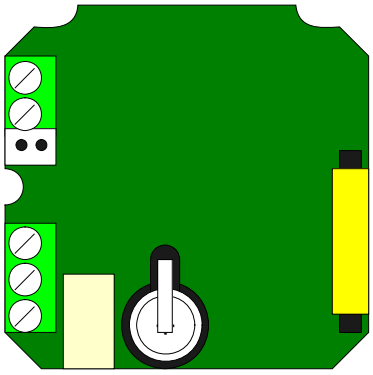


Insert the backup battery (included in the delivery) in the holder
POSITIVE POLE UP

SREL.ADV



un SREL and SREL.ZK



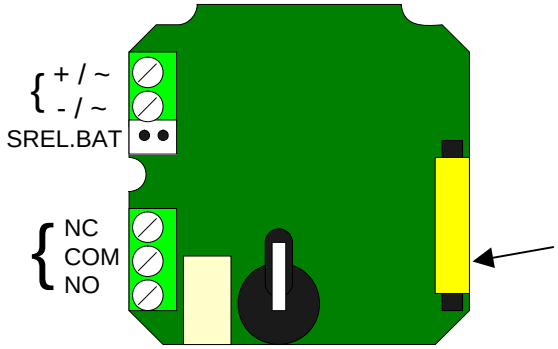
5.0 Installation

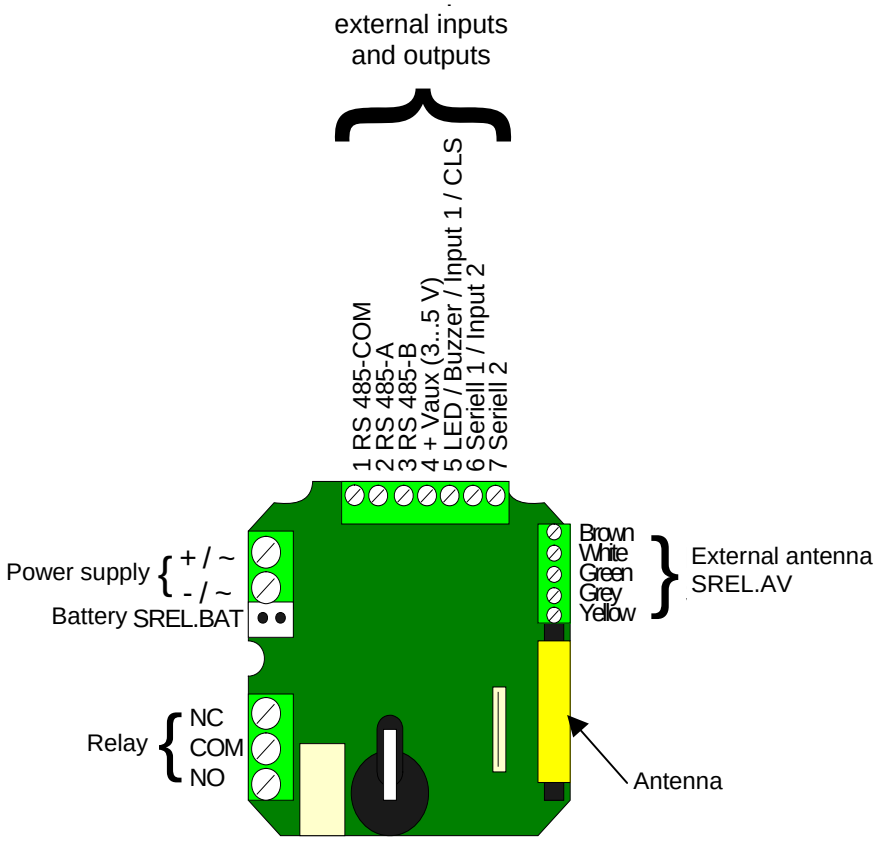
- Switch off the supply voltage (if necessary, pull out the plug or disconnect the battery).
- Connect all cables to the terminals provided on the Smart Relay (see Connection Assignments on the following page)

  If you are connecting a direct current power supply, make sure that you get the polarity right.
- You can attain the largest reader range if you align the Smart Relay antennas so that they are parallel to that on the transponder during the installation.
- Switch on the supply voltage (if necessary, insert the plug or connect the battery).
- Verify the function of the Smart Relay with a transponder in the condition as received from the factory.
- Program the Smart Relay with the SimonsVoss software (we recommend software version LDB.EXE 1.40 or later).
- Use a transponder that is now authorised in order to test the functioning of the Smart Relay again.

6.0 Connection Assignments

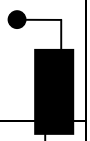
6.1 SREL and SREL.ZK





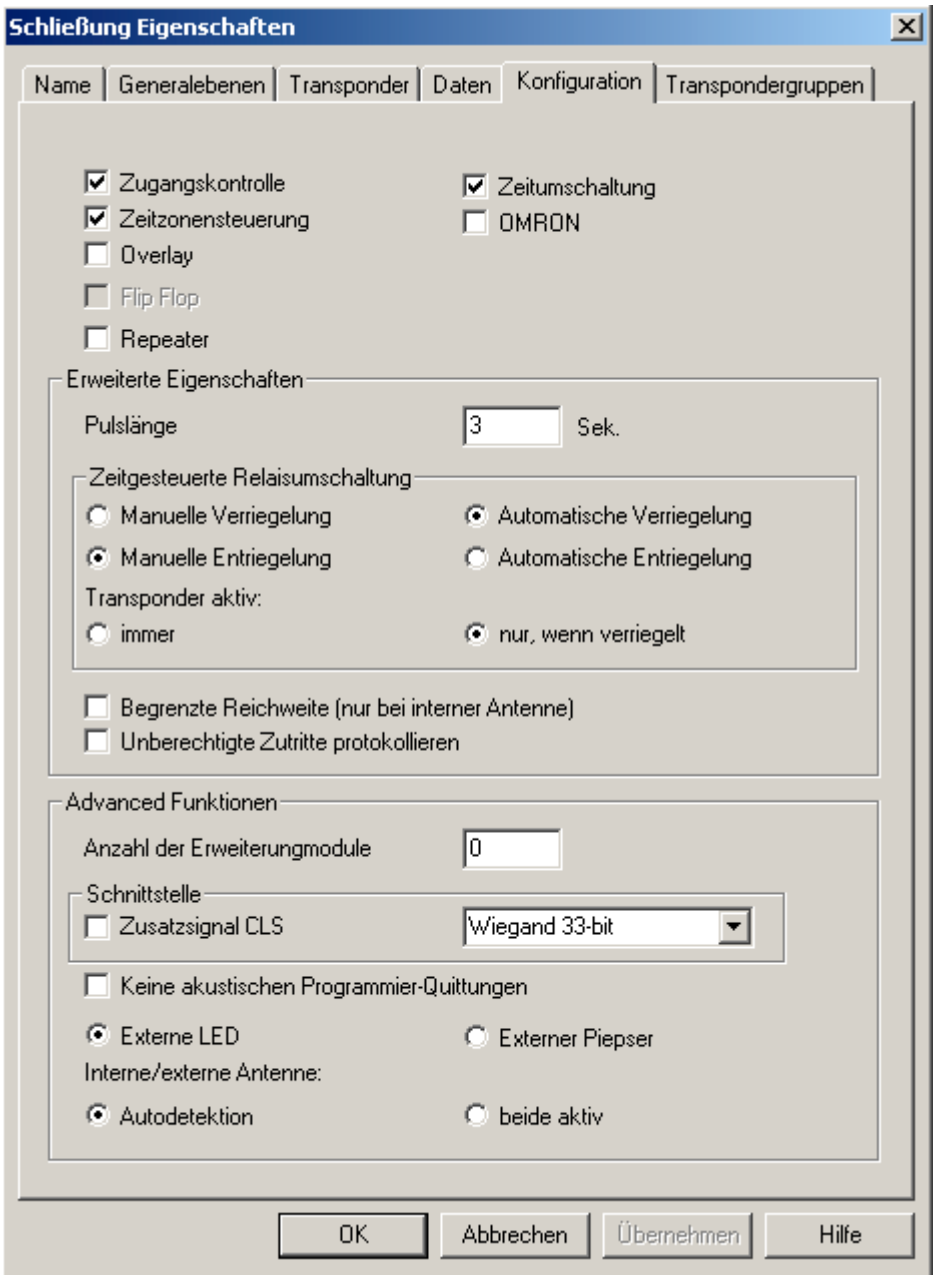
6.2 SREL.ADV

6.3 Description of the SREL, SREL.ZK and SREL.ADV Connection

Name	Symbol	Description
Power supply	+ / ~	If connecting a direct current (5 to 24 VDC) source, use the positive pole, otherwise use one of the two alternating current connections (12 VAC)
Power supply	- / ~	If connecting a direct current (5 to 24 VDC) source, use the negative pole, otherwise use the second alternating current connection (12 VAC)
Battery		Plug connection for a battery (when operating without a power supply) Battery ordering code, incl. connector: SREL.BAT
NC relay 		Normally closed contact for the change-over relay. When not acted on, this contact is closed to the COM relay
COM relay		Common contact on the change-over relay. This contact is either wired to the NC relay (normally closed contact) or to the NO relay (normally open contact)
NO relay		Normally open contact on the change-over relay. When acted on, this contact is closed to the COM relay
External antenna Brown White Green Grey Yellow	 BN WH GN GY YL	Connection for the coloured cables of an extended antenna (ordering code SREL.AV)
RS-485COM RS-485A RS-485B	C A B	Bus connection for external modules
+ Vaux	+V	Typically 3.0 - 5.0V +/- 0.5V for external LED's or buzzer, max. 10mA
LED/ Buzzer/ Input 1/ CLS	F3	Multifunction connection
Serial 1/ input 2	F2	Multifunction connection
Serial 2	F1	Multifunction connection

7.0 Programming and Configuration

When you choose Smart Relay as the locking type in the SimonsVoss software (Version 1.40 and later), you have the following configuration option's:



7.1 Access control

Only possible for SREL.ZK and SREL.ADV
The last 1024 transponder activation's are saved with the date and time.

7.2 Time zone control

Only possible for SREL.ZK and SREL.ADV
You can load a time zone plan and the transponders are then approved or blocked, according to their time zone group.

7.3 Overlay

Replacement transponders can overwrite the transponders that they replace. After the first operation with a replacement transponder, the system blocks the original transponder.

7.4 Flip Flop

Pulse mode (default setting) is switched off, and the pulse width does not matter any more. When flip flop mode is switched on, the Smart Relay changes its state from ON to OFF or back again, each time the transponder is activated. We recommend this mode for switching lights or machines, etc.

With an installation of this kind, it may be necessary to make sure that the power supplies and door openers are suitable for continuous current operation.

7.5 Repeater

The Smart Relay receives a transponder signal and then sends it again, amplified. You can use the Smart Relay in this function in order to link a way through larger radio paths. The distance to another Smart Relay can be up to 2.0 m (6.5 ft).

7.6 Time switching

Only for SREL.ZK and SREL.ADV
If time switching is activated, you must load a time zone plan, which allows a general release of the Smart Relay during the marked times (in Group 5). This means that a door can be freely accessible during the day but only opened by transponder at night.

With an installation of this kind, you must make sure that the power supplies and door openers are suitable for continuous current operation.

If you select time switching, the "Time-controlled relay switching" field has the following option's (you may select more than one):

1. Manual locking:
   The door is not locked automatically according to the selected time of day, but instead only after an authorised transponder is operated after this time.

2. Automatic locking (default setting):
   The door is locked at exactly the time stored in the time zone plan.

3. Manual unlocking (default setting):
   The door is not unlocked automatically according to the selected time of day, but instead only after an authorised transponder is operated after this time.

4. Automatic unlocking:
   Normally, the door is not opened at the selected time of day, but instead only after operation with the first transponder. If it is required that the door always open automatically at the selected time of time, then select this option.

5. Transponder active:

   - Always:
   Normally, a transponder cannot be used during the released periods. If it is necessary, however, to be able to lock the door during this time (for example, if everyone leaves the building), then select this option.

   - Only when locked:
   In this operating mode, the transponder has no effect during the released time.

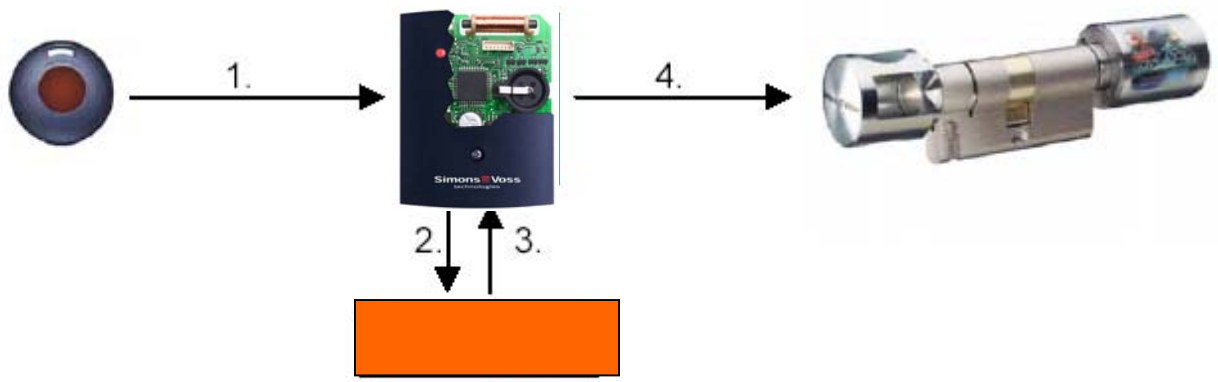
7.7 OMRON

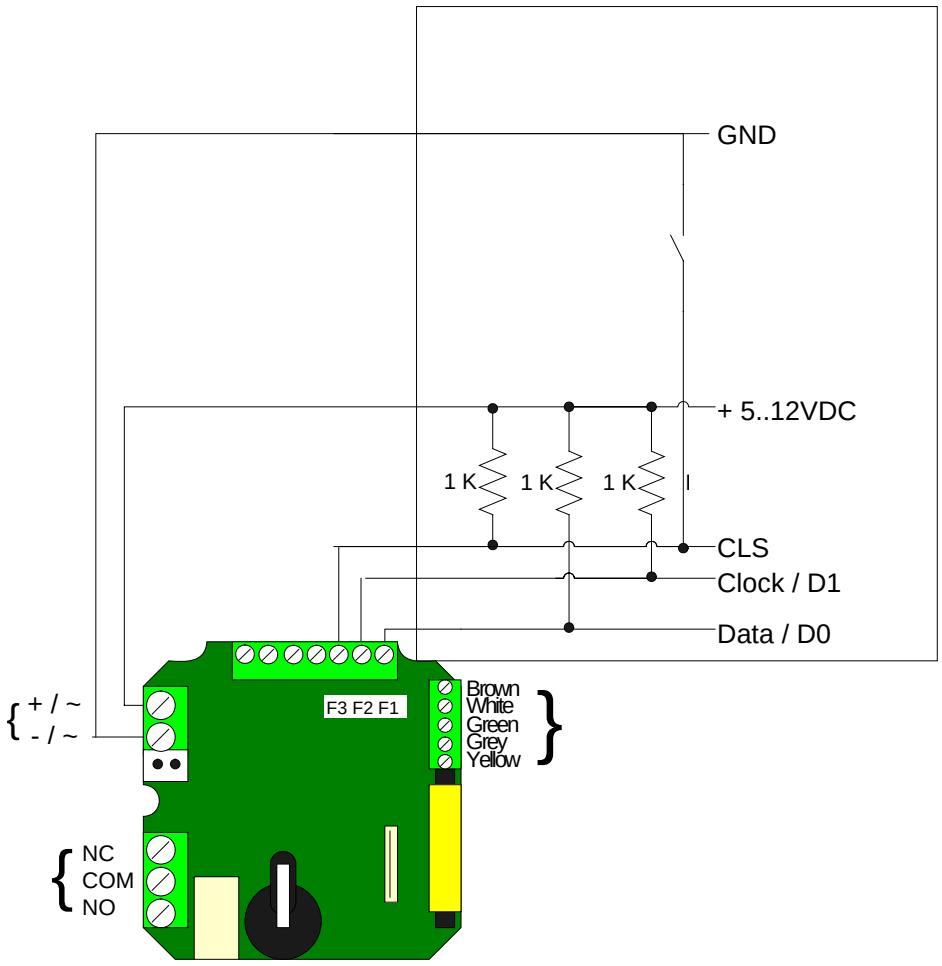
Only for SREL.ADV
Many access control and time recording systems have serial interfaces for connection to card readers. It is also possible to connect a Smart Relay over these interfaces. This means that you can also use the SimonsVoss transponder in systems from other companies.

If you would like the Smart Relay to transmit the transponder data to such an external system, and for the Smart Relay to send a remote opening command to a cylinder when released by this external system, then select this option, both on the Smart Relay and on the cylinder.

Select the type of external system under "Interface". The following types are available:

7.7.1 The Smart Relay in OMRON Mode





7.7.2 No acoustic programmer acknowledge

Only SREL.ADV
Mark this field if you want no programmer acknowledge to be given via a connected buzzer/beeper when the Smart Relay is programmed.

7.7.3 External beeper/ External LED

Only SREL.ADV
This is where you specify which external unit is connected. In Flip Flop mode, the Smart Relay generates a continuous signal when switched if there is an external LED connected; if a beeper is connected, it briefly acknowledges each change of state with a sound signal.

7.7.4 Internal/ external antenna

Only SREL.ADV

- Autodetection:
  If an external antenna is connected, only this antenna is used. The Smart Relay then switches the internal antenna off. If no external antenna is connected (default case), the Smart Relay works with the internal antenna.

- Both active:
  The Smart Relay can assess entries from transponders at both antennas.

7.7.5 Number of expansion modules

Only for SREL.ADV
This is where you indicate the number of external modules that are connected to the Smart Relay. These modules are connected to terminals RS-485 **C**OM, RS-485 **A** and RS-485 **B**. For more information, refer to the documentation for the separate modules.

7.7.6 Pulse length

This is where you specify the value, in seconds, for the pulse width of the switching pulse. The value has a range from 0.1 to 25.5 seconds. For example, if you enter 3 seconds here, then a door opener will be released for 3 seconds before it is then blocked again.

7.7.7 Interface

Only for SREL.ADV
For operation as a serial interface, you can select the type of card reader here that the Smart Relay should simulate. You have the following option's:

- Wiegand 32 bit
- Wiegand 26 bit
- Primion
- Siemens
- Kaba Benzing
- Gantner Legic
- Isgus

You will find the corresponding cabling information in the chapter "The Smart Relay as a Serial Interface".

7.7.8 Restricted range

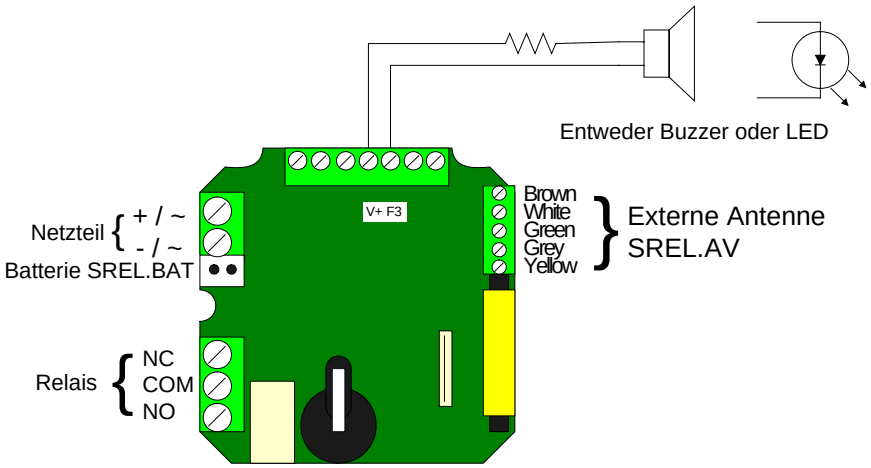
If you select this option, the reader range from the transponder → Smart Relay is restricted from approximately 1.5 m (4.9 ft) down to 0.4 m (1.3 ft). For example, you can use this option if there are several Smart Relays close to one another and individual transponders are authorised for several Smart Relays.

7.7.9 External Beeper/ External LED

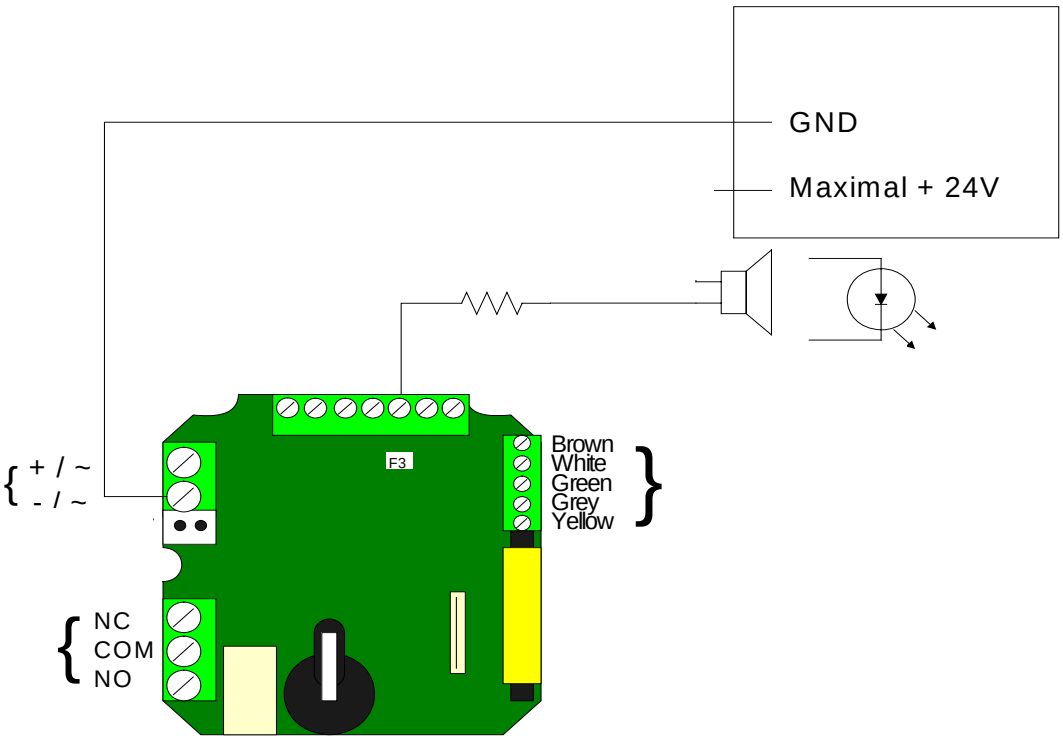
Only for SREL.ADV
Normally, the Smart Relay is configured for connection to an LED. If you want to connect a beeper or buzzer as the external signaller, mark this option. In this way, the beeper/buzzer can be used for an acoustic acknowledgement, instead of the LED.

Should the connected component need less than 10 m maximum current at 3 VDC, the connecting plan can look as follows:

Possibly resistor for restricting power
The V+ output supplies a max. 10 mA at 3 VDC



If the current for the external component is larger than 10 mA, then this component must be fed by an external power supply. In this case, the connection should be made as follows:



7.7.10 Log unauthorised accesses

Only for SREL.ZK and SREL.ADV
Normally, only authorised transponder operations are logged. If you also want to record attempts to open the door with an unauthorised transponder, you must select this option.

8.0 The Smart Relay as a serial Interface

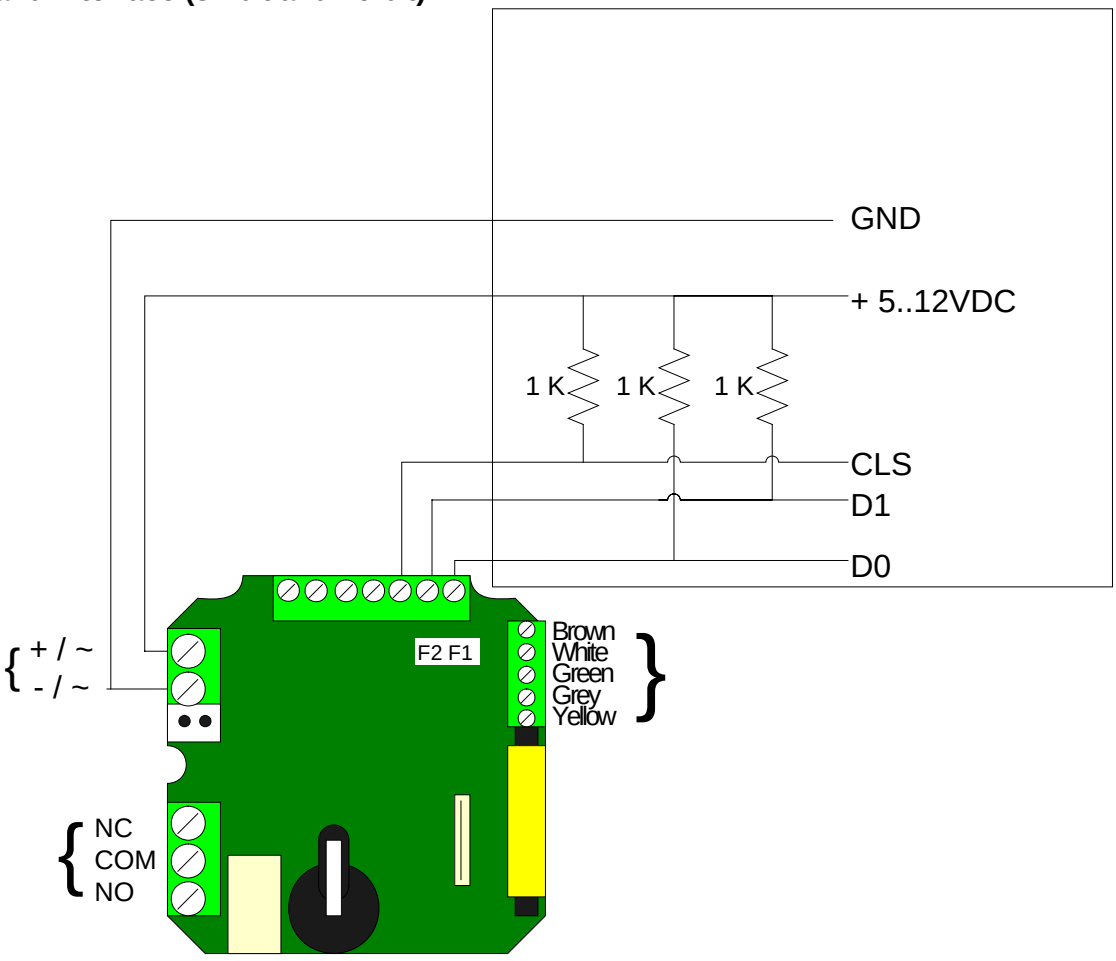
8.1 Functional Description

In order to use a Smart Relay as a card reader in an external access control or time recording system, both the hardware (cable and signal level) and the data formats must correspond exactly to those of the card reader. Only then can the external system understand and evaluate the data from the SimonsVoss transponders.

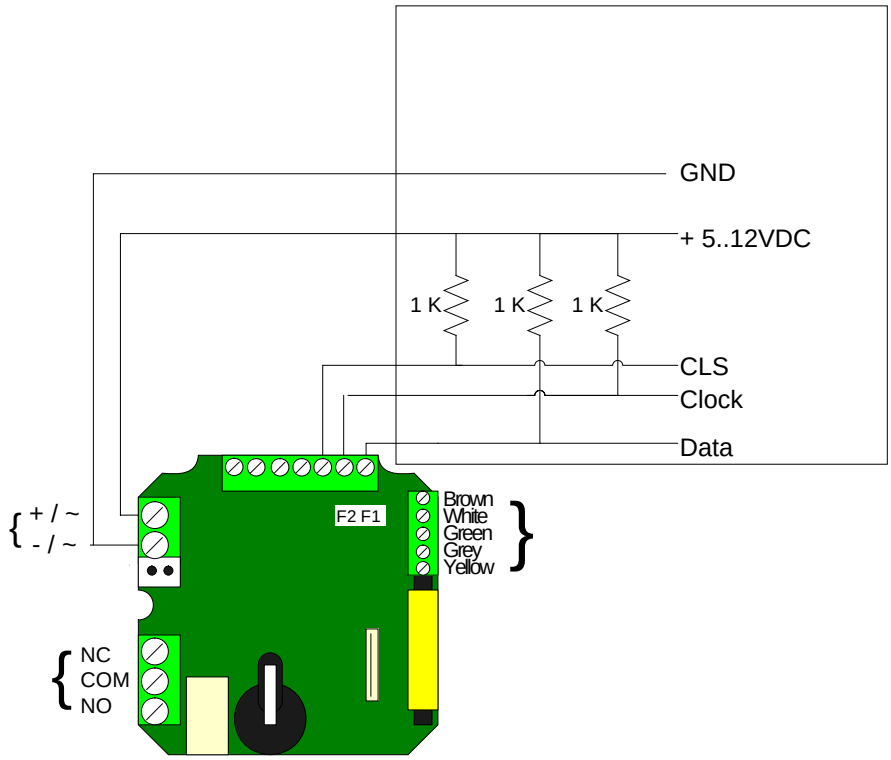
First the Smart Relay reads the transponder data. If the transponder is authorised in the Smart Relay, this data is forwarded to the external system via the serial interface. SimonsVoss Product Management will provide you with detailed specifications for the individual data formats.

You can select the correct reader type in the Smart Relay configuration using the SimonsVoss software, version 1.40 and later. The following sections describe the connections for the different reader versions.

8.2 Wiegand Interface (32 bit and 26 bit)



8.3 Kaba Benzing, Siemens, Gantner Legic, Primion, Isgus Interface



9.0 Maintenance

9.1 Battery Warning and Battery Replacement if you are using the SREL.BAT battery

In case the battery capacity is no longer sufficient, a Smart Relay can issue a battery warning as follows:

SREL, SREL.ZK, SREL.ADV

- Internal LED blinks 8 times each time you operate the transponder and before the relay is switched.

  If you are operating with a battery, you should make sure that this LED can be seen from the outside.

Only SREL.ADV

- External LED blinks 8 times or external buzzer beeps 8 times, each time you operate the transponder.

Approximately 100 operations are possible after the battery warning, so you should replace the battery as soon as possible.

9.2 Backup Battery

A discharged backup battery can cause the internal clock in the type SREL.ZK or SREL.ADV Smart Relay to stop. For this reason, we recommend that you check the time of day at routine intervals. A backup battery will last approximately 10 years if there is no power supply interruption. If the Smart Relay needs the backup battery often because of frequent power failures, you should replace this battery routinely.

If you operate the Smart Relay with a battery (SREL.BAT), you are not permitted to use the backup battery.

10.0 Data sheet

Housing made of black plastic: Dimensions [LxWxH]	72 x 57 x 25.5 mm (approximately 2.8 x 2.2 x 1.0 inches)
Degree of protection	IP 20, not tested for outside use
Temperature	Operation at: -22°C to +55°C (-31°F to +131°F) Storage at: 0°C to +40°C (32°F to +104°F)
Air humidity	<95% without moisture condensation
Printed circuit board dimensions [LxWxH]	50 x 50 x 14 mm (approximately 2.0 x 2.0 x 0.6 inches)
Line voltage	12 VAC or 5-24 VDC (no reverse voltage protection)
Power limit	Power supply must be limited to 15 VA
Quiescent current	< 5 mA
Max. current	< 100 mA
Programmable pulse width	0.1 to 25.5 seconds
Output relay type	Change-over
Output relay continuous current	Max. 1.0 A
Output relay switch on current	Max. 2.0 A
Output relay switching voltage	Max. 24 V
Output relay switching capacity	10^6 operations at 30 VA
Multifunction connections: F1, F2, F3	Max. 24 VDC, max. 50mA
Vibrations	15G for 11 ms, 6 shocks according to IEC 68-2-27 Not released for continuous used under vibrations